

Descriptive Summary of the Changes in the Main Eight Hawaiian Islands, Circa 2000

Only baseline land cover data exist for the Hawaiian Islands; however, during the accuracy assessment procedure of these data, numerous change processes were evident and detailed by analysts. Predominantly, these changes represented three distinct themes: first, changes in previously cultivated land covers; second, biological changes due to natural processes, i.e., the conversion of old lava flows to grasslands; and third, the human development process, particularly in the form of resorts and hotels along the coasts.

Historically, Hawaii was a haven for large-scale plantations of sugar cane crops; however, with increased competition from developing nations, Hawaii can no longer compete with cheap third-world sugar. As a result, many of these plantations have been allowed to go fallow as sugar cane production was curtailed. Currently, only one large sugar cane producer and plantation exists in Hawaii on the island of Maui.

Not all cultivated sugar cane land has been allowed to go fallow; some areas have simply changed from sugar cane to coffee crops or experimental corn crops as witnessed on the islands of Maui and Kauai. On the island of Lanai, large plantations of pineapple and sugar cane are now fallow since the industry collapse. In other areas, fallow cultivated land has been transformed to forest cover by transplanting eucalyptus seedlings, thus entering the silviculture cycle through the planting, harvesting, and reforestation of eucalyptus forest stands. Additionally, some cultivated lands have been converted to forest scrub through natural regeneration processes.

Molokai is considered a rural Hawaiian Island with a large native population characterized by traditional agricultural practices as well as some commercial agriculture and development. Molokai compares directly to Niihau, a privately owned island with just a few native families practicing traditional agriculture.

The main island of Hawaii, the youngest island, is characterized by more bare land than any other island. Over time, grasses have colonized large portions of these bare areas; subsequently, the main island has large grasslands suitable for pasture. In fact, the northern portion of the island boasts the Parker Ranch, which is the second largest cattle ranch in the United States.

Resort development has also played a role in land cover change throughout the Hawaiian Islands. Primarily located in coastal cities, resort development has occurred at the expense of scrub/shrub semi-forested classes, as well as bare land cover classes represented by old, barren lava flow areas. Oahu, as the center of economic activity for the Hawaiian Islands, is a prime example; Honolulu is heavily urbanized and densely populated. Areas south and east of Oahu are also quite urbanized and characterized by resort developments.

Below are seven tables, one for each of the Hawaiian Islands examined by the Coastal Change Analysis Program. These tables contain a data summary for the baseline land cover classification and include; land cover classes, the number of pixels present in each class, and their corresponding values in acres.

Tabular Summary: Main Island, Hawaii, January 1, 2001

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	132348	29433	0.55%
2	High Intensity Developed	20140	4479	0.08%
3	Low Intensity Developed	91992	20458	0.38%
4	Cultivated Land	107913	23999	0.45%
5	Grassland	2817341	626560	11.68%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	3496635	777630	14.50%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	2158096	479947	8.95%
10	Palustrine Forested Wetland	0	0	0.00%
11	Palustrine Scrub/Shrub Wetland	409	91	0.00%
12	Palustrine Emergent Wetland	484	108	0.00%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	4934	1097	0.02%
17	Bare Land	2802056	623160	11.62%
18	Water	12485297	2776654	51.77%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	24117645	5363618	100.00%

Tabular Summary: Kauai, Hawaii, December 26, 2000

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	5046	1122	0.16%
2	High Intensity Developed	6180	1374	0.19%
3	Low Intensity Developed	37008	8230	1.16%
4	Cultivated Land	133802	29757	4.20%
5	Grassland	159406	35451	5.01%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	339858	75582	10.67%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	841916	187237	26.44%
10	Palustrine Forested Wetland	23990	5335	0.75%
11	Palustrine Scrub/Shrub Wetland	13668	3040	0.43%
12	Palustrine Emergent Wetland	4467	993	0.14%
13	Estuarine Forested Wetland	450	100	0.01%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	7836	1743	0.25%
17	Bare Land	24733	5500	0.78%
18	Water	1585784	352669	49.80%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	3184144	708134	100.00%

Tabular Summary: Lanai, Hawaii, February 28, 2000

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	404	90	0.04%
3	Low Intensity Developed	6858	1525	0.75%
4	Cultivated Land	318	71	0.03%
5	Grassland	130960	29125	14.36%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	30512	6786	3.35%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	217324	48332	23.83%
10	Palustrine Forested Wetland	0	0	0.00%
11	Palustrine Scrub/Shrub Wetland	0	0	0.00%
12	Palustrine Emergent Wetland	0	0	0.00%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	10406	2314	1.14%
17	Bare Land	18968	4218	2.08%
18	Water	496062	110321	54.40%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	911812	202781	100.00%

Tabular Summary: Maui-Kahoolawe, Hawaii, January 6, 2001

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	11642	2589	0.15%
3	Low Intensity Developed	52911	11767	0.70%
4	Cultivated Land	249037	55384	3.29%
5	Grassland	600263	133495	7.93%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	613946	136538	8.12%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	456154	101446	6.03%
10	Palustrine Forested Wetland	0	0	0.00%
11	Palustrine Scrub/Shrub Wetland	0	0	0.00%
12	Palustrine Emergent Wetland	1487	331	0.02%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	7884	1753	0.10%
17	Bare Land	233359	51898	3.08%
18	Water	5338147	1187172	70.57%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	7564830	1682372	100.00%

Tabular Summary: Molokai, Hawaii, February 28, 2000

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	6493	1444	0.13%
2	High Intensity Developed	934	208	0.02%
3	Low Intensity Developed	18634	4144	0.36%
4	Cultivated Land	14578	3242	0.29%
5	Grassland	150012	33362	2.94%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	115832	25760	2.27%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	417321	92810	8.17%
10	Palustrine Forested Wetland	0	0	0.00%
11	Palustrine Scrub/Shrub Wetland	0	0	0.00%
12	Palustrine Emergent Wetland	0	0	0.00%
13	Estuarine Forested Wetland	4929	1096	0.10%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	3901	868	0.08%
17	Bare Land	20833	4633	0.41%
18	Water	4352311	967928	85.24%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	5105778	1135494	100.00%

Tabular Summary: Nihau, Hawaii, December 26, 2000

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	0	0	0.00%
3	Low Intensity Developed	349	8	0.02%
4	Cultivated Land	0	0	0.00%
5	Grassland	24709	550	1.66%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	1765	39	0.12%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	152473	3396	10.23%
10	Palustrine Forested Wetland	0	0	0.00%
11	Palustrine Scrub/Shrub Wetland	943	21	0.06%
12	Palustrine Emergent Wetland	919	20	0.06%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	4324	96	0.29%
17	Bare Land	24312	542	1.63%
18	Water	1280766	28527	85.93%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	1490560	33200	100.00%

Tabular Summary: Oahu, Hawaii, February 21, 2000

	CLASSES	PIXELS	ACRES	PERCENT
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	113871	25324	1.64%
3	Low Intensity Developed	176520	39257	2.55%
4	Cultivated Land	110314	24533	1.59%
5	Grassland	203477	45252	2.94%
6	Deciduous Forest	0	0	0.00%
7	Evergreen Forest	373903	83154	5.40%
8	Mixed Forest	0	0	0.00%
9	Scrub/Shrub	702031	156127	10.14%
10	Palustrine Forested Wetland	420	93	0.01%
11	Palustrine Scrub/Shrub Wetland	1554	346	0.02%
12	Palustrine Emergent Wetland	2830	629	0.04%
13	Estuarine Forested Wetland	1953	434	0.03%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	0	0	0.00%
16	Unconsolidated Shore	11579	2575	0.17%
17	Bare Land	34178	7601	0.49%
18	Water	5193416	1154984	74.98%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	TOTALS	6926046	1540311	100.00%